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## GENERAL NOTES.

GEOGRAPHY AND TRAVELS.<sup>1</sup>

ASIA.—*Perak and its Tin.*—The little state of Perak, upon the western shore of the peninsula of Malacca, is in a fair way to become the world's principal center of tin production. Perak occupies a district about ninety miles long by fifty wide, and is traversed by three chains of mountains parallel to the sea. These mountains are separated by plains, the chief of which is traversed by the Soungi Perak, or river of silver, a fine stream some 150 miles long, and navigable for Malay barks throughout most of its length. European ships of more than 500 or 600 tons cannot ascend beyond Dourian Sebatang, at which point the river turns westward toward the sea.

The temperature is equable, rarely exceeding 95°, or sinking below 76°; the alternation from the wet season (September to February) to the dry producing no change upon the temperature.

The mountain masses of Perak are granitoid. Sedimentary rocks occur only in patches, but almost the entire surface of the plains is covered with drift. The tin occurs in quartz veins in the granitoid rocks, and is in the form of the oxide known to mineralogists as cassiterite. The encasing rock of these veins, as is the case in Cornwall, is a porphyroid granite, with large crystals of feldspar.

*The Island of Hainan.*—This large island is not salubrious. Much of the soil on the coast is marshy, and fever rages both in the marshes and in the woods. The water contains much vegetable and mineral impurity; typhoons destroy the harvest before it is ripe, and Cantonese pirates make frequent descents upon the coast, and seize the trading-junks of the merchants. The natives are to all appearance like other Chinese, but are held in contempt and abhorrence by even the poorest boatmen of Canton.

The port of Hoi-how, with about 12,000 inhabitants, has really no harbor, but is exposed to typhoons and to the north wind. It is upon a river, and ships cannot approach within two miles of it. Some three miles distant is Kiungchow, the capital of the island.

On the main land opposite is the flourishing port of Pakhôi, the center of a large legitimate and larger contraband trade. Its harbor is an excellent one, extensive, deep, and well protected from storms.—(*Ch. Labarthe, Rev. de Geog., Janv., 1884.*)

*The Savages of Indo-China.*—Dr. Neis (Bull. de la Soc. de la Geog., 1883) recounts his adventures among the various tribes of Mois, who inhabit the country to the north and east of French Cochin China and west of Anam. The Traos, Stieng, Shop, Late, and Thioma are tribes of Mois, among which the Late seem to be the most defenceless. They have no fire-arms, and

<sup>1</sup> This department is edited by W. N. LOCKINGTON, Philadelphia.

when the Stiengs pursue them to procure slaves for the Laotians their only defence, except flight, is to plant sharpened bamboos in the paths. Our traveler also visited the remains of the Tsiampa, whose language resembles that of the Malays.

*The New Hebrides.*—M. Roberjot (Bull. de la Soc. de Geog., Paris, 1883), describes these islands, commencing with Annatom, the most southern. In the islands generally the males greatly exceed the females in number. In Annatom the latter are but six per cent of the population of 1215. Tanna has 4000 natives; the women wear a skirt of bark and cocoa-palm leaves, the men less still. The island is an active volcano. Erromango is entirely madreporic, and is the greatest source of sandal-wood. Sandwich island is also of coral. Near the village are seventeen hollow trunks of trees pierced with holes and a long slot on one side. By striking these a rude music is produced. In Mallicolo two upper incisors are struck violently out from all females of the age of puberty. Wooden tom-toms exist, with carved faces. The inhabitants are about 6000. Ambrym is a volcano, 1067 meters in height.

Spiritu Santo is the largest island, and is bordered to the south by a chain of coral islands. Two rivers flow into the canal between these islets and the main island. In this island the men assist in carrying burdens, which is not the case in the other islands.

AFRICA.—*South Central Africa.*—Mr. Anderson has recently transmitted to the Royal Geographical Society extensive notes and a map of the region between the Orange and Vaal rivers and the Zambesi, from ocean to ocean. The chief sources of the Vaal are in a district called New Scotland, where there are numerous small lakes, among them Lake Cressie, at an elevation of 5813 feet. The central part of the Káláhára desert is traversed by the Omaramba, Black and White Nosop, Oup, and Elephant's river, all flowing southward into the Molapo, which runs westward at a little north of 26° S. lat., finally turning southward and entering Orange river under the name of Hygap. The Káláhára desert extends northward to the Chobe as far as its junction with the Zambesi, from which point its eastern boundary runs nearly south to the Molapo, which it crosses further to the west, and extends to Orange river near Kheis. The Chobe rises much farther north than was supposed, as does also the Cubango, which, with the Okayanka Laagte, form the Tonka, flowing into Lake Ngami. Most of these rivers consist, during most of the year, of stretches of water alternating with dry beds. The Zougá flows between Lake Ngami and the great Makarakara Salt Vlei, and it is so level that in April and May it flows eastward; in June and July, westward. From the Zougá, near its exit from Lake Ngami, the Matabe runs to the Zambesi. This Matabe is the only outlet for

the waters of the Zouga and of the lakes; but occasionally, when there is no overflow, it runs southward.

Between the Hygap and Great Fish rivers, at about  $27^{\circ}$  S. lat., flows the Back river, with two outlets. The Great Fish river rises in S. lat.  $22^{\circ} 40'$ , flows south, and enters Orange river about ninety miles from its mouth. West of this river is a mountain country of granite, gneiss and trap, drained by numerous tributaries of the Great Fish river. The coast west of these mountains is a sandy desert, extending seventy miles inland. The upper courses of the Swakop, Kuisip and Omaruru are in a fertile country, among granite mountains, some of which attain an attitude of about 9000 feet, but the lower courses of these rivers pass through desert. Most of Ovampo-land, between the Cunene and the Káláhárá desert, is a high table-land, and is very healthy. The Káláhárá desert scarcely seems to be a desert in the usual sense of the word, but to be almost wholly a level, swampy region, with much jungle and many salt-pans. The rivers and salt-pans are, to a great extent, dry during much of the year, and the region is very unhealthy. Bushmen are the principal inhabitants. The eastern part of the belt surveyed, north of the Orange river, is drained by the Limpopo or Crocodile river, the sources of which are on the northern slope of the great water-shed that runs across the Transvaal south of Pretoria. The small lake from which flows the Marico affluent of the Limpopo is only ten miles distant from the eye or lake-source of the Molapo. The region around the Marico and the Notuane, an affluent of the Limpopo from the west, is described as healthy and well-wooded, with lovely mountains and park-like valleys. Other important tributaries entering the Limpopo from the Matabele country to the north of it, are the Makalapsie, Maclutsie, Shasha and Nuanettie, all flowing through a mountainous land, and having many branches. The water-shed of the Molopo mountains, averaging about 4300 feet in height, divides the affluents of the Limpopo from the Gwaii, with its tributaries the Kagane, Amatza, etc., and from the Umn-yaki, all of which flow into the Zambesi. The country east of the Sabia, which, rising in the Molopo mountains, flows eastward to the Indian ocean, is ruled by the Zulu chief Umzila, and has not been thoroughly explored.

AMERICA. — According to Mr. Im Thurn, whose travels in British Guiana have recently been published, there is in the far west of that country, or over the Brazilian boundary, where the savannah itself rises 5000 feet above the sea, a flat table-land, the edges of which are more or less perpendicular cliffs 2000 feet high. No traveler has ever been round it, so that it may be accessible from the other side, and there is a way, as yet untried, which Mr. Im Thurn believes may prove practicable. The summit of this plateau of Roraima seems to be forest-covered, and enough is known of the fauna and flora of the district to make it

certain that a naturalist would find himself well rewarded for the ascent. There are traditions of strange isolated tribes that live in this inaccessible region.

Professor Geo. Davidson has communicated to *Science* the following particulars of recent volcanic action in Alaska :

The explosion of October 6, 1883, split perpendicularly in twain the mountain of St. Augustin, situated on the island of the same name, forty-nine miles west of the settlement on Port Graham or English harbor, in Cook's inlet, Alaska. Vast columns of smoke were seen to rise from the summit of the mountain, a column of white vapor rose from the sea near the island, and a great earthquake wave, twenty-five to thirty feet high, came upon Port Graham, followed by two other waves, estimated at eighteen and fifteen feet. Had it not been low water all the people of the settlement would have been lost. The tides rise and fall about fourteen feet. Capt. Sands, who was at English harbor, states that if there were plenty of water in the line of rupture of the mountain, it would be possible for a vessel to sail through. Capt. Culkie, of the schooner *Kodiak*, who approached St. Augustin on Nov. 10th, found a new island about a mile and a-half long and seventy-five feet high, that had been upheaved in the ten-fathom passage between the island and the mainland. At the same time two extinct volcanoes on the Alaskan peninsula, reported to be about west from the active volcano Iliamna (12,000 feet high), burst into activity. A party of Aleuts, living on the island, are supposed to be lost.

THE ARCTIC.—*Novaya Zemlya*.—M. Grinevetsky, who journeyed across *Novaya Zemlya* in the spring of 1878, reports that the southern island consists of three different parts. The northern part is covered by mountains that are quite unknown, and is bounded to the south by the Pakhovaya river ; the middle part is covered, on the west coast, by five or six parallel chains of hills, the highest summits of which reach 800 feet, while to the east is a wide plateau ; and the southern part is a plateau not more than 450 feet high. There are two varieties of reindeer on the islands, one confined to the southern, the other to the northern island, and the latter variety greatly resembles the reindeer of Spitzbergen. This fact, taken with the feebleness of the cold sea current in Barentz sea, and the large amount of mud and gravel on the floating ice north-west of *Novaya Zemlya*, gives rise to the idea that Spitzbergen is connected with *Novaya Zemlya* by an archipelago.

THE ARCHIPELAGO OF CAPE HORN.—The French expedition has been actively engaged in surveying the coasts of this group of islands, which extend south of Beagle strait about 58° S. lat. These islands present the same structure as the continent of which they are the continuation. Off their western coast is an

almost continuous chain of islets and detached rocks, separated from the coast by intricate and deep canals. The western coast itself is a line of snow-covered mountains, while the eastern parts of the islands, comparatively flat and of Tertiary formation, recall the pampas of the continent.

It has been found that existing maps are in error in many points. The west coast only of Hoste island had previously been delineated, but now the entire contour is known. New Year sound, a great bay filled with islets and ending in four great arms, and the strait between Pothuau and Jaureguiberry islands have been fixed with precision, and the coast line of Wollaston group, composed of the three large islands, Grevy, Bayly and Wollaston, has been determined.

The islands consist of peninsulas joined to each other by narrow low isthmuses. Between these peninsulas run deep fjords, often terminating in glaciers that descend to the sea. Ponsonby sound, the largest of these fjords, penetrates twenty-eight miles into the interior of Hoste island.

GEOGRAPHICAL NOTES.—Professor Hall has made a complete survey of the Waddy Arabah and the Dead sea, with a traverse across Southern Palestine. Akabah was laid down too far south, and the south part of the Dead sea, as shown on the maps, is quite out of its true shape and position. The Lisan has to be shifted three miles.—Mr. Wilfred Powell, with four or five Europeans, including a naturalist and a geologist, will leave England about the beginning of March to explore New Guinea. The intention is to proceed in a steam launch up the Ambernoli river, on the north coast, and then proceed southwards to Astrolabe bay.—The region of the Pamir has now been thoroughly explored by Dr. Regel and his companions. The valley of the Panj and its tributaries, as far south as Sist ( $37^{\circ}$  N. lat.) and east to Shakddere ( $72^{\circ} 50'$  E. long.), has been followed up, and an immense bend of this river to the west, due to a high chain of mountains, and a wide lake, Shiva, 11,000 feet above the sea, to the west of this bend, will considerably modify the maps of the west of this region. The great Pamir chain has been crossed in four places, and the whole region has been covered with a network of surveys.—A letter from Dr. Rich. Böhm, dated July, 1883, shows that he and his companion, Paul Reichardt, have settled for awhile at Qua Mpara, on the western shore of Tanganyika.—Mr. Thonar has entertained the Geographical Society of Paris with an account of his search for the remains of the Crevaux mission. Crevaux and his companions were murdered by the Tobas in retaliation for an attack made upon them by the people of Caiza. The victims were killed upon the identical spot where, a few days before, ten or twelve Indians had been killed. Haurat and Blanco, who escaped massacre by swimming the river, were afterwards taken, and died after six months of

captivity and suffering. Ceballos, the sole survivor, was a prisoner for five months. M. Thonar, with his party, visited the scene of the massacre and traversed the mysterious regions of the Chaco with only the loss of a single man, spite of the hostile attitude of the Indians.—Mr. Chas. Winnieke has succeeded in exploring and mapping about 40,000 square miles of previously unknown country in Australia. Distances of from 200 to 300 miles had to be traversed across the highest sand ridges before water could be obtained.—Mr. O'Neill, who arrived at Mozambique Feb. 4, after having traversed 1400 miles of unexplored country between that place and Lake Nyassa, has discovered Lake Amarambu, the existence of which was previously unknown. He reports Lake Shirwa to be smaller than has been represented. On his return he followed the Likelungo valley, which he found to be well peopled.

### GEOLOGY AND PALÆONTOLOGY.

THE MASTODONS OF NORTH AMERICA.—There are probably nine species of the genus *Mastodon* which may be clearly distinguished as former inhabitants of North America. The genus first appears in the *Ticholeptus* beds and continues to, if not into, the human period. The statement that this genus occurs in the White River formation is erroneous.<sup>1</sup> The oldest species is probably the *M. proavus* Cope. The Loup Fork epoch contains the remains of eight of the nine species, while one only, the *M. ohioiticus* Cuv., is characteristic of later ages.

The following table expresses the characters of these species in analytical form :

I. Intermediate molars with not more than three crests.

α. Crests acute, transverse.

β. Valleys uninterrupted.

Last superior molar with three crests and a heel; crests low not serrate . *M. proavus*.  
Last superior molar with four crests and a heel; crests elevated not serrate

*M. ohioiticus*.

ββ. Valleys interrupted.

Edge of crest tuberculate . . . . . *M. serridens*

αα. Crests transverse, composed of conic lobes.

β. Valleys ?uninterrupted.

Last inferior molar narrow, with four crests; no accessory tubercles . . . *M. shepardi*.

β. Valleys interrupted.

Last inferior molar with four crests and a heel; symphysis short, M. .150; smaller size . . . . . *M. euhypodon*.

Last inferior molar with four crests and a cingulum; symphysis longer, M. .280; size medium . . . . . *M. productus*.

Last inferior molar with five crests and a heel; symphysis very long, M. .450; size largest . . . . . *M. angustidens*.

“aaa. Crests broken into conic lobes; those of opposite sides alternating.

Last inferior molar narrow, supporting four crests and a heel . . . . . *M. obscurus*.”

<sup>1</sup> See Report of the U. S. Geological Survey of the 40th parallel, Vol. I, p. 412.